中山醫學大學100學年度碩博士班甄試入學招生考試試題

新聞稿

醫學研究所博士班 乙組

考試科目：分子生物學　　時間：80分鐘

※請注意本試題共(1)張，如發現頁數不足，應當場請求補齊，否則缺頁部份概以零分計算。 第 (1) 頁

本試題共五大題，總分100分。

1. 請簡述癌細胞與正常細胞的差異性。(15%)

2. 請說明缺氧(Hypoxia)在腫瘤形成過程中所扮演的角色。(20%)

3. Single nucleotide polymorphism (SNP)與癌症的發生過程有密切的相關性。當我們初步發現A gene的SNP會增加乳癌的發生率，試問該如何設計實驗來進一步探討及證實A gene與乳癌的相關性。(25%)

4. 下列摘要是節錄自今年的”Cell”雜誌，請簡述其內容及其可能的應用性。(20%)

Although specific microRNAs (miRNAs) can be upregulated in cancer, global miRNA downregulation is a common trait of human malignancies. The mechanisms of this phenomenon and the advantages it affords remain poorly understood. Here we identify a microRNA family, miR-103/107, that attenuates miRNA biosynthesis by targeting Dicer, a key component of the miRNA processing machinery. In human breast cancer, high levels of miR-103/107 are associated with metastasis and poor outcome. Functionally, miR-103/107 confer migratory capacities in vitro and empower metastatic dissemination of otherwise nonaggressive cells in vivo. Inhibition of miR-103/107 opposes migration and metastasis of malignant cells. At the cellular level, a key event fostered by miR-103/107 is induction of epithelial-to-mesenchymal transition (EMT), attained by downregulating miR-200 levels. These findings suggest a new pathway by which Dicer inhibition drifts epithelial cancer toward a less-differentiated, mesenchymal fate to foster metastasis.

5. 請簡述下列之名詞及其與癌症的相關性。

(1). Autophagy (5%)
(2). Anoikis (5%)
(3). Apoptosis (5%)
(4). Angiogenesis (5%)